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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/525,443

02/24/2005

Tadashi Takahashi

5576-177

3864

20792 7590 10/30/2009
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EXAMINER

BURKHART, ELIZABETH A

ART UNIT

PAPER NUMBER

1792

MAIL DATE

DELIVERY MODE

10/30/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 10/20/2009 have been fully considered but they are not persuasive. Applicant argues that Sasaki uses different reactants than the atmospheric pressure CVD method of Takahashi (iron and sulfur powder vs. iron halide and thioamide) and provides no suggestion that the conditions required for forming pure pyrite film (i.e. Fe/S flux ratio greater than 6.8 and temperature more than 300°C) using low pressure CVD would be suitable for any other deposition process. Therefore, Sasaki provides no motivation to combine the temperature ranges discussed by Sasaki with the method of Takahashi for the same reasons as acknowledged by the Examiner regarding the disclosure of Schleich in the Office Action of 3/6/09. The examiner disagrees. Sasaki discloses vaporizing iron and sulfur powder to form the iron and sulfur vapors for deposition and also discloses that it was known to use other precursors such as $\text{Fe}(\text{CO})_5$ and TBDS (p. 1193; col. 1, par. 5; col. 2, par. 1). These reactants differ from that of Takahashi, similarly to Schleich. However, the difference between Schleich and Sasaki is that Sasaki discloses that the high partial pressure of sulfur (Fe/S ratio) and high temperature (more than 300°C) can be a critical factor to prepare pure pyrite and once these conditions are satisfied, pure pyrite can be prepared by other methods (p. 1193, bottom col. 1). Therefore, Sasaki suggests that the temperature range and Fe/S ratio utilized would be suitable or could be extrapolated to other methods, including the method of Takahashi. Thus, it would have been obvious to use the conditions of Sasaki (Fe/S ratio and temperature range) in the method of Takahashi to form a pure pyrite film

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at lower temperatures, especially since the Fe/S ratio can be easily controlled in Takahashi due to separate iron and sulfur reactants and since Takahashi is an improvement upon low pressure CVD methods which use precursors disclosed by Sasaki.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth Burkhart whose telephone number is (571)272-6647. The examiner can normally be reached on M-Th 7-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/Elizabeth Burkhart/
Examiner, Art Unit 1792

/Timothy H Meeks/
Supervisory Patent Examiner, Art Unit 1792